C-130H Hercules #439 11/12/15

Aircraft:
C-130H Hercules #439 (See full schedule)
Flight Number:
NAAMES Nov-2015 Data Flight #1
Payload Configuration:
NAAMES
Nav Data Collected:
No
Total Flight Time:
9.9 hours
Submitted by:
Cate Easmunt on 11/12/15
Flight Segments:

From:	CYYT	**To:**	CYYT
Start:	11/12/15 10:53 Z	**Finish:**	11/12/15 20:45 Z
Flight Time:	9.9 hours		
Log Number:	161006	**PI:**	Michael Behrenfeld
Funding Source:	Paula Bontempi - NASA - SMD - ESD Ocean Biology and Biogeochemistry		
Purpose of Flight:	Science		

Flight Hour Summary:

	161006
Flight Hours Approved in SOFRS	100
Total Used	64.5
Total Remaining	35.5

161006 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining
10/31/15	Airworthiness Test Flight	Check	1	1	99
11/04/15	Project Test Flight	Check	5.5	6.5	93.5
11/09/15 - 11/10/15	NAAMES Nov-2015 Transit to St.. John's	Transit	4.6	11.1	88.9
11/12/15	NAAMES Nov-2015 Data Flight #1	Science	9.9	21	79
11/14/15	NAAMES Nov-2015 Data Flight #2	Science	9.7	30.7	69.3
11/17/15	NAAMES Nov-2015 Data Flight #3	Science	8.8	39.5	60.5
11/18/15	NAAMES Nov-2015 Data Flight #4	Science	9.8	49.3	50.7
11/23/15	NAAMES Nov-2015 Data Flight #5	Science	9.4	58.7	41.3
11/28/15	NAAMES Nov-2015 Return Transit	Transit	5.3	64	36
11/28/15	NAAMES Nov-2015 Return Transit	Transit	0.5	64.5	35.5

Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.

Related Science Report:

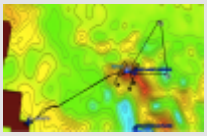
NAAMES - C-130H Hercules #439 11/12/15 Science Report

Mission:
NAAMES
Mission Summary:

This was the first science flight for NAAMES. The ship carried out its first morning station at Point S1 (51.01167^{o} N, 43.635^{o}W) and was largely covered by a stratocumulus cloud deck at roughly 1-2 km GPS altitude. The aircraft transited from St. John?s Int?l Airport to the ship position at Point S1 at high altitude, with a series of speed, yaw, and pitch vertical winds calibration maneuvers completed at roughly 15,000 ft. altitude on the way out. After overflying the ship at maximum altitude, the aircraft proceeded northeast to begin the downwind bow-tie legs, during which it encountered broken to scattered clouds at the north end of the track and continuous stratocumulus clouds at the south end of the track. After completing the downwind bowtie high- and low-level legs, the aircraft transited toward the ship and performed a series of stacked cloud module legs covering more than 10 minutes each in duration. The LARGE in situ aerosol inlet experienced severe icing during the cloud top level leg and was inoperable for a substantial amount of time following the cloud module. These icing issues did not impact the boundary level, below-cloud, and cloud base sampling legs, which were highly successful. After completing the cloud module, the aircraft proceeded northwest to carry out the upwind, high-altitude bowtie leg and then spiraled down to approximately 300 ft. However, since the LARGE inlet icing issue had not cleared by this point, and because the presence of hydrated sea spray aerosols and low temperatures in the low level boundary layer appeared to contribute to additional LARGE inlet clogging, the decision was made to skip most of the low-level, upwind bowtie leg and ascend to high altitude to continue with the remote sensing survey from points S1 to S2 to S3. This was carried out with reasonably cloud-free conditions allowing ocean lidar remote sensing to be achieved for much of these legs; although, substantial scattered boundary layer clouds slightly impacted these measurements. After crossing point S3, the aircraft proceeded back to the ship where it spiraled down through the marine boundary layer before knocking it off to return to base via an inline ascent. Cloud bases were consistent throughout the flight at 0.9-1.5 km, while cloud tops were around 1.5-2.0 km. Preliminary boundary layer aerosol concentrations were fairly uniform and suggested minimal continental influence (< 100 cm^{-3}). Preliminary HSRL ocean profiles over the non-cloudy part of the flight track exhibited consistently low backscatter. Preliminary cloud data showed 60-100 droplets cm^{-3} at cloud base with a modal diameter around 15 mm, which increased to 25 mm diameter near cloud top with no clear change in concentration. Instruments generally operated very well with the exception of the inlet icing issues experienced by LARGE for a portion of the flight and the failure of the 4STAR data acquisition system due to cabin heat related issues. These adverse instrument issues will be resolved during tomorrow?s no-fly day.

Images:

Flight Track Overlaid on Eddy Map



Read more

Submitted by:
Richard Moore on 11/23/15

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